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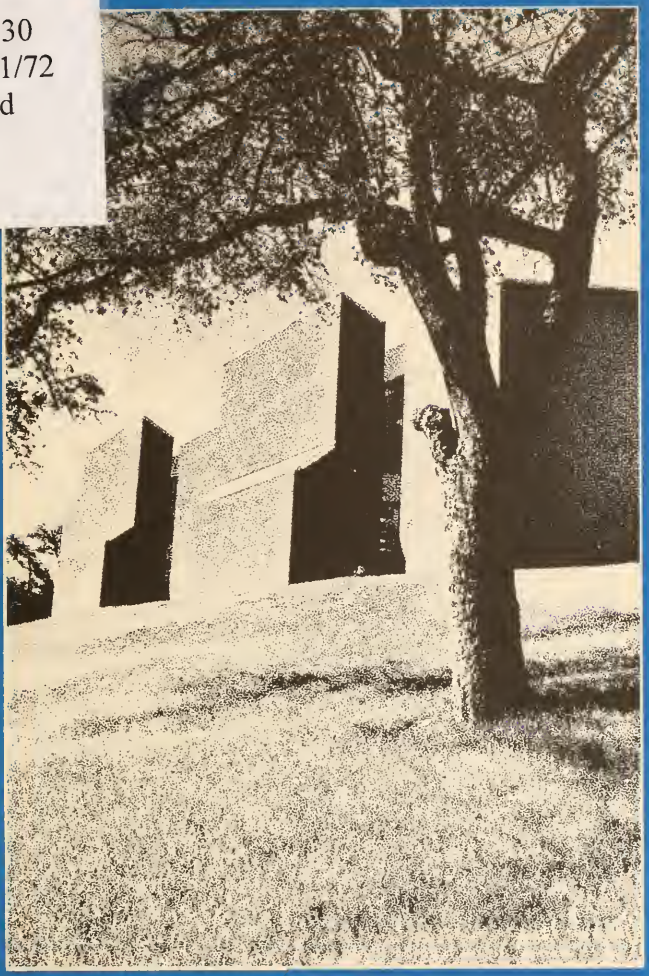
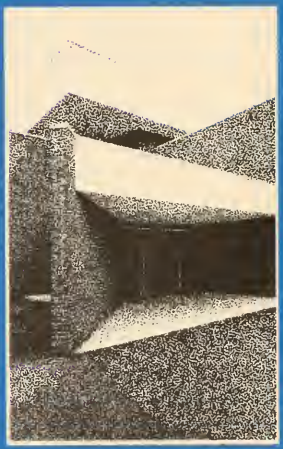


# GRADUATE SCHOOL CATALOG 1971-1972



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## UNIVERSITY OF NEW HAVEN

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# 1971 - 72 Catalog
# The Graduate School

# UNIVERSITY OF NEW HAVEN

MAIN CAMPUS
300 ORANGE AVENUE
WEST HAVEN, CONNECTICUT 06516
TELEPHONE (203) 934-6321

This catalog supercedes all previous catalogs and brochures published by the Graduate School and describes academic programs offered during 1971-72. Graduate students admitted to the University in the fall of 1971, and thereafter, are bound by the regulations published in this catalog. Additional information may be obtained from the Office of the Dean, the Graduate School. Prospective students seeking application blank and further information should write or call the Office of the Dean, the Graduate School.

## ADMINISTRATION

Marvin K. Peterson, M. Ed., L. H. D.
*President*

Phillip S. Kaplan, Ph. D.
*Dean of the Graduate School*

Alexis N. Sommers, Ph. D.
*Associate Dean of the Graduate School*

Joseph A. Parker, Ph. D.
*Associate Dean of the Graduate School*

George A. Schaefer, M. B. A.
*Associate Dean for Administration*

THE GRADUATE SCHOOL
300 ORANGE AVENUE
WEST HAVEN, CONNECTICUT 06516

## PROLOGUE

The Graduate School was established in the Fall, 1969. The first graduate degrees were awarded in June, 1971, and marked a new phase in the University's development.

A graduate program involves a commitment, or rather a major responsibility, to provide a graduate faculty and resources capable of providing sound instruction and a dynamic learning experience. The University has made this commitment.

Higher education serves both the individual students and the total society. Universities exist as essential components of modern life. Society is ever-changing as it seeks to solve both old and new problems and to create a better life for each of its members.

The role of the University in meeting the needs of a dynamic society is to provide educated men and women trained to meet the manpower requirements of such a society.

It is the policy of the University to train men and women to lead productive lives and fulfill the needs of the urban environment by offering a broad range of flexible programs. In scheduling courses, the Graduate School seeks to accommodate both part-time and full-time students. Graduate courses and certain fields of concentration are also available to qualified men and women who wish to update their previous training or to acquire new professional skills without pursuing a formal degree objective. The Graduate School is therefore open to all qualified citizens.

## DEGREE PROGRAMS

The University of New Haven offers graduate programs leading to the degrees of

Master of Business Administration
Master of Public Administration
Master of Science in Industrial Engineering

Students may elect a field of concentration within each program. Such concentration consists of a group of electives in a particular area. For example, students may take a field of concentration in Computer Technology by electing a sequence of four courses offered by the Departments of Industrial Engineering and Mathematics.

# GENERAL REQUIREMENTS

## I. Admission

An applicant for admission to the Graduate School must submit:

(a) complete official transcripts of all previous college work;
(b) letters of reference; and
(c) a formal application.

Admission decisions are based primarily on an applicant's undergraduate record. A bachelor's degree from an accredited college is required for admission.

In support of their application, students may submit their scores from either the Admission Test for Graduate Study in Business or the Graduate Record Examination (Aptitude Test and Advanced Test). A student may be required to take one of these tests.

Qualified applicants deficient in certain basic undergraduate courses may be admitted with the provision that these deficiencies are remedied during the first year of graduate study.

Foreign students deficient in English may be required to take remedial work in English.

Undergraduate courses required to meet graduate prerequisites may not count toward meeting the requirements for a graduate degree.

Students may be admitted at the start of any trimester.

Students must register for the first time in person at which time they will have an opportunity to review their undergraduate work with a member of the faculty and plan a program of study. At this time, a student's previous work is reviewed by a member of the faculty who determines what course or courses may be waived, if any. This initial meeting provides an opportunity for the student to discuss with a faculty member his personal goals, academic strengths, and a possible area of concentration.

Subsequent registration for each trimester will generally be handled by mail.

Students may request academic counseling at any time. Appointments with members of the graduate staff and faculty should be scheduled through the Office of the Graduate School.

It is the student's responsibility to select courses in accordance with prerequesites, the advisor's recommendations, the departmental plan of study (if required), and the requirements for the degree.

A student is not required to file a formal plan of study with the Graduate School. It is the student's responsibility to meet the stated requirements for the degree. This policy is consistent with the University's tradition of offering a flexible curriculum to meet the particular needs of an individual.

## II. Academic Standards

A student must maintain a 3.0 quality point ratio for graduation.

The Graduate School has a grading system as follows: A—superior performance, B—good performance, C—passing performance, D—poor performance, and F—failure. The quality points by grade are as follows: A=4, B=3, C=2, D=1, and F=0.

A student may take a course over, but the original grade remains on record and is included in all future calculations of the student's quality point ratio. A low quality point ratio must be raised by taking additional courses, or by repeating courses, until the minimum necessary for graduation is obtained. If at any time a graduate student's quality point ratio drops below 3.0, the Graduate School will, at its discretion, review the student's record and suggest or require a remedial course of action. A quality point ratio of less than 3.0 may be grounds for dismissal from the Graduate School, if this is the recommendation of a formal review.

It is expected that a graduate student will receive grades of A and B throughout his career at the University. If a student feels that his class performance will not result in a grade of B or better, he should question his preparation and objectives, and withdraw from the course.

A grade of D, although it carries graduate credit, should generally be repeated. A course with a grade of D may not be counted as a prerequisite for an advanced graduate course.

## III. Transfer Credit and Waiver of Courses

Credit may be given for graduate courses taken at other accredited institutions. However, a student must complete a minimum of 30 graduate credit hours in residence at the University of New Haven.

Certain required courses in each program may be waived on the basis of undergraduate courses taken at other accredited institutions. For a course to be waived, a student must first secure the written approval of the Department Chairman or a faculty member acting for the Department Chairman. The basis for waiving certain courses in each program is outlined elsewhere in this catalog.

Any waiver decision is based upon a student's academic record. The decision to waive a course is also based upon the assumption that the student has a good grasp of the material covered in that course. Therefore, a student may subsequently be required to take a course which had been waived previously.

## IV. General Information

Graduate School operates on a trimester system. During an academic year, there are three trimesters of 13 weeks each, including the final examination period. Classes meet once each week in the late afternoon and early evening. The first trimester begins in early September and ends in early December; the second trimester begins in early January and ends in early April; the third trimester beings in early April and ends in early July. An

academic calendar is published each year.

Students may be admitted at the start of any trimester.

Students must complete all requirements for their degree within 5 years of the date of initial matriculation in the program. Students admitted with advanced standing must complete all requirements for the degree within 4 years of the date of the initial matriculation at the University of New Haven. Any extension of the time must have the written approval of the Dean of the Graduate School.

### V. Cancellation of Classes

In the event that it becomes necessary to cancel graduate classes due to inclement weather, radio announcements starting approximately 3:00 PM will be made on all local New Haven radio stations plus WICC, WATR, WTBY, WWCO, WCDQ, WADS, WNLC, WTIC, and WFIC.

An announcement of the cancellation of undergraduate day classes does not apply to the late afternoon and early evening graduate classes. The cancellation of graduate classes will be announced independently.

### VI. Requirements for the Thesis & Seminar Project

Students engaged in independent study for the preparation of a thesis or seminar project select, or are assigned, a faculty advisor who acts as the student's research advisor until the thesis or seminar project is completed.

A thesis or seminar project is deposited permanently in the University Library. Students are required to submit two copies of a thesis or seminar project to the Library. The copies should not be bound. Binding will be done by the Library.

Additional copies of a thesis or seminar project are generally required. For this requirement and other regulations regarding the preparation of a thesis or seminar project, students should consult the "Manual for the Preparation of Graduate Thesis and Technical Project." Copies of the manual are available in the Graduate School office.

### VII. Awarding of Degrees

The University will award degrees twice a year, in January and at commencement in June. A formal ceremony will not take place in January.

Students completing the requirements for a degree at the end of the fall trimester will receive the degree in January; students completing the requirements for a degree at the end of the winter trimester will receive the degree at the June commencement; and students completing the requirements for a degree at the end of the spring trimester will receive the degree the following January. Students completing the requirements for a degree in early July may request a formal statement that they have completed all requirements for their degree and will receive the degree in January.

All students may elect to receive their degrees at the June commencement should they wish to participate in the ceremony.

Candidates for a degree must file a petition with the Graduate School prior to the end of the ninth week of the trimester in which they expect to complete the requirements for the degree. Forms for this purpose are available in the Graduate School office. Upon submission of this petition, the Graduate School will review the candidate's record and certify that he has met the requirements for the degree.

If after filing a petition a student has not met the requirements for the degree, the student is required to file a new petition after he is reasonably certain that he has completed the requirements for the degree. This second petition should be filed prior to the ninth week of the next trimester.

Students completing a thesis or seminar project as part of their degree requirement must file a petition in the same manner but must also submit their complete and final manuscript to their thesis or project advisor prior to the end of the twelfth week of the trimester in which they expect to complete the requirements for their degree award.

## VIII. Tuition and Fees

Tuition and fees for 1971-72 are:

| | |
|---|---|
| non-refundable application fee | $10.00 |
| tuition per credit hour | 50.00 |
| registration fee each trimester | 5.00 |
| thesis or seminar project binding fee | 12.00 |
| fee for non-credit computer course | 25.00 |
| graduation fee | 15.00 |

Tuition for graduate courses is due at registration. However, the University policy permits a graduate student to pay one-half the total tuition at registration and the balance within 45 days.

Students are responsible for the payment of tuition to the University Some companies will reimburse employees for tuition. It is the responsibility of students to arrange with their employer for reimbursement.

The refund policy for graduate students who withdraw from any course or from the program is as follows: 100% refund of tuition upon formal withdrawal in the first week, 75% refund of tuition upon formal withdrawal in the second week, 50% refund of tuition upon formal withdrawal in the third week, and 25% refund of tuition upon formal withdrawal in the fourth week.

No refund will be made after the fourth week of classes.

For a student to be eligible for a refund, he must formally notify the Graduate Office of his intention to withdraw and complete the withdrawal form.

Undergraduates may enroll for graduate courses with the written permission of their department chairman, who will subsequently notify the

Graduate School. If a graduate course counts toward completing the requirements for an undergraduate degree, the student will be required to pay the current undergraduate tuition charge for the credit hours involved. If the course counts toward meeting the requirements for a graduate degree at the University or elsewhere, the student will then pay the current graduate tuition for the credit hours.

### IX. Financial Aid

Financial aid is available to graduate students through higher education loan programs.

The State of Connecticut and other states have established loan programs offering long term loans at low interest rates. In Connecticut, a student may borrow up to a maximum of $1500 each school year. Repayment starts one year after graduation. If the family's income (adjusted) is under $15,000 annually, federal interest benefits cover the full interest while in attendance.

Full information and applications for loans may be obtained from the Director of Financial Aid, University of New Haven.

# MASTER OF BUSINESS ADMINISTRATION

The general purpose of the MBA program at the University of New Haven is the education of men and women at the graduate level for careers in business administration. Vital to this objective is the development of a management perspective enabling students to see the totality of management rather than the narrow concerns of the specialist. Specifically, the program strives to:

1. develop a professional point of view with respect to managing an organization;
2. equip students with the modern analytical and quantitative tools of decision-making;
3. impart an understanding of the tasks and problems of management at all levels by means of case studies and simulation; and
4. increase the student's knowledge and skills in particular management function.

### Requirements for the MBA Degree

A maximum of 48 semester hours or a minimum of 36 semester hours is required of candidates for the MBA degree.

A maximum of 12 semester hours of required courses in the MBA program may be waived on the basis of undergraduate courses taken at accredited institutions. Courses in the MBA program that may be waived are: Economic Analysis I, Quantitative Methods I, Marketing, and Finance.

Candidates for the MBA degree are urged to write a thesis as part of the requirement for the degree. Candidates who elect not to write a thesis must take two additional courses in place of Thesis Seminar I and II, one of which must be BA 636 (Seminar in Management Theory).

Each candidate must complete a minimum of 30 graduate semester hours in residence at the University of New Haven in order to qualify for the MBA degree.

Of the 6 semester hours of electives in the MBA program, 3 semester hours may be taken in the MSIE program.

Undergraduate courses may not be counted in meeting the minimum 36 credits required for the MBA degree.

A student must complete the basic core before taking advanced courses in the MBA program. The basic core consists of EC 601, EC 602, EC 603, and EC 604. EC 601 and EC 603 may be waived.

Students in the MBA program should be familiar with the use of computers in solving problems. The use of a computer is required in a number of courses in the MBA program.

During the academic year, the Graduate School offers an intensive non-credit course in the use of computers (BA 600 Computer Orientation). The object of the course is to give the student a sound grounding in the use of computers in solving business problems. This course carries no graduate credit. The course will consist of 12 class meetings of 3 hours each. A fee of $25 will be charged for this course.

MBA candidates may instead elect to take an undergraduate computer course (IE 102 Introduction to the Computer) offered by the Department of Industrial Engineering.

### Waiver Policy

For a course to be waived, a student must first secure the written approval of the department chairman or a faculty member acting for the chairman of the department in which the course is offered. Only the following courses may be waived: Quantitative Methods I, Economic Analysis I, Marketing, and Finance.

Quantitative Methods I may be waived in the case of a student who has had at least 12 semester hours of college mathematics. A student who seeks to waive Quantitative Methods I must also pass an examination on the material covered in the course. This examination will be given by the instructor.

Economic Analysis I may be waived in the case of a student who holds an undergraduate degree in economics or has had a minimum of 6 semester hours of intermediate level economic theory or analysis. A full year of economic principles is not considered an intermediate level course.

Marketing may be waived in the case of a student who holds an undergraduate degree in marketing or has taken a minor in marketing, including courses in marketing management and marketing research.

Finance may be waived in the case of a student who holds an undergraduate degree in finance or has taken a minimum of 6 semester hours of advanced level courses in finance, including 3 semester hours of money and banking.

### Thesis

Students electing to write a thesis must register for Thesis Seminar I and II. The thesis must show ability to organize material in a clear and original manner and present well-reasoned conclusions.

The thesis is written under the direction of the faculty member in charge of the thesis seminar or a faculty member with special competence in the subject matter of the thesis. A first draft of the thesis must be presented to the candidate's advisor at least 4 weeks prior to the end of the term in which the candidate expects to complete the requirements for the MBA degree. No final examination on the thesis is required.

## PROGRAM OF STUDY FOR THE MASTER OF BUSINESS ADMINISTRATION DEGREE

**Required Courses**

| *Course Number and Title* | | *Credit* |
|---|---|---|
| *EC 601 | Economic Analysis I | 3 |
| EC 602 | Economic Analysis II | 3 |
| *EC 603 | Quantitative Methods I | 3 |
| EC 604 | Quantitative Methods II | 3 |
| IE 601 | Industrial Engineering I | 3 |
| *BA 609 | Marketing | 3 |
| *BA 615 | Finance | 3 |
| P 619 | Organizational Behavior | 3 |
| A 621 | Managerial Accounting | 3 |
| EC 625 | Industrial Relations | 3 |
| EC 629 | Public Policies Toward Business | 3 |
| BA 633 | Managerial Economics | 3 |
| **BA 635-636 | Thesis Seminar I & II | 6 |
| | Electives | 6 |
| | | 48 |

**Elective Courses**

| *Course Number and Title* | | *Credit* |
|---|---|---|
| **BA 637 | Seminar in Management Theory | 3 |
| BA 639 | Marketing Research | 3 |
| BA 641 | Mathematical Models and Methods in Marketing | 3 |
| BA 645 | Current Problems in Corporate Finance | 3 |
| BA 649 | Investments | 3 |
| EC 653 | Econometrics | 3 |
| BA 657 | Forecasting | 3 |
| A 661 | Managerial Accounting Seminar | 3 |
| IE 621 | Operations Research I | 3 |
| BA 669 | Insurance: Principles and Practices | 3 |
| BA 673 | Business Law: Contracts and Sales | 3 |
| BA 677 | Business Law: Negotiable Instruments, Business Organizations, and Real Estate | 3 |
| EC 687 | Collective Bargaining | 3 |
| EC 691 | Labor Legislation | 3 |
| IE 683 | Systems Analysis | 3 |
| IE 681 | Industrial Dynamics | 3 |
| | | 48 |

* Indicates courses that may be waived.

** Candidates who elect not to write a thesis must take two additional courses in place of Thesis Seminar I and II, one of which must be BA 637 (Seminar in Management Theory).

## MASTER OF PUBLIC ADMINISTRATION

The general purpose of the Master of Public Administration degree at the University of New Haven is the training of men and women at the graduate level of public service careers. Specifically, the program strives to:

1. equip students with the modern analytical and quantitative tools of decision-making and their application to the complex problems of government;
2. expose the students to the wide range of administrative and managerial problems and responsibilities of government; and
3. increase the student's knowledge and skills in the particular management functions of budgeting, planning, public policy formation, public finance, and public personnel administration.

### Requirements for the Master of Public Administration Degree

A maximum of 48 semester hours or a minimum of 36 semester hours is required of candidates for this degree.

A maximum of 12 semester hours of required courses in the MPA program may be waived on the basis of undergraduate courses and/or appropriate work experience. Courses that may be waived are: Organizational Behavior, Seminar in Communities and Social Change, Public Administration Internship, and Seminar Project in Public Administration.

Each candidate must complete a minimum of 30 graduate semester hours in residence at the University of New Haven in order to qualify for the Master of Public Administration degree.

Undergraduate courses may not be counted in meeting the minimum 30 credits required for the Master of Public Administration degree.

Students in this program should be familiar with the use of computers. The use of a computer is required in a number of courses in the program.

During the academic year, the Graduate School will offer an intensive non-credit course in the use of computers. The object of the course is to give the student a sound grounding in the use of computers in solving business problems. This course carries no graduate credit. The course will consist of 12 class meetings of 3 hours each. A fee of $25 will be charged for this course.

Candidates in this program may instead elect to take an undergraduate computer course (IE 102 Introduction to the Computer ) offered by the Department of Industrial Engineering.

### Waiver Policy

For a course to be waived, a student must first secure the written approval of the department chairman or a faculty member acting for the chairman of the department in which course is offered. Only the following courses may be waived: Organizational Behavior, Seminar in Communities and Social Change, Public Administration Internship, and Seminar in Public Administration.

Organizational Behavior may be waived in the case of a student who has taken a minimum of 12 semester hours of psychology.

Seminar in Communities and Social Change may be waived in the case of a student who has taken a minimum of 12 semester hours in sociology, including a course in community relations.

Public Administration Internship may be waived for a student on the basis of the candidate's work experience. The basis for the waiver is to be determined by the department chairman.

Seminar in Public Administration may be waived for a student on the basis of the candidate's work experience. The basis for waiver is to be determined by the department chairman.

## PROGRAM OF STUDY FOR THE MASTER OF PUBLIC ADMINISTRATION DEGREE

### Required Courses

| *Course Number and Title* | | *Credit* |
|---|---|---|
| EC 608 | Economics for Public Administrators | 3 |
| PA 691 | Research Methods in Public Administration | 3 |
| PA 600 | Principles of Public Administration | 3 |
| *PA 693 | Public Administration Internship | 3 |
| PA 635 | Statistics for Public Administrators | 3 |
| *P 619 | Organizational Behavior | 3 |
| P 620 | Administrative Behavior | 3 |
| PA 620 | Public Personnel Administration and Collective Bargaining in the Public Sector | 3 |
| PA 602 | Public Policy Formulation and Implementation | 3 |
| PA 632 | Public Finance and Budgeting | 3 |
| *PA 604 | Seminar in Communities and Social Change | 3 |
| *PA 690 | Seminar Project in Public Administration | 3 |
| | Electives | 12 |
| | | 48 |

### Elective Courses

| *Course Number and Title* | | *Credit* |
|---|---|---|
| PA 603 | Resource Adminstration | 3 |
| PA 605 | The Communication Process | 3 |
| PA 630 | Governmental Accounting | 3 |
| PA 633 | Financial Administration | 3 |
| PA 634 | Problems of Municipal Management | 3 |
| PA 650 | Administrative Law | 3 |
| PA 651 | Municipal Corporations | 3 |
| PA 660 | Urban Planning: Theory and Practice | 3 |
| PA 661 | Problems of Metropolitan Areas | 3 |
| PA 662 | Environmental Design | 3 |
| PA 692 | Seminar in Public Opinion | 3 |
| EC 603 | Quantitative Methods I | 3 |
| EC 625 | Industrial Relations | 3 |
| EC 687 | Collective Bargaining | 3 |
| IE 604 | Management Systems | 3 |
| IE 614 | Data Information Systems | 3 |
| IE 621 | Operations Research I | 3 |
| PS 604 | Political Parties | 3 |

| | | |
|---|---|---|
| PS 608 | Legislative Process | 3 |
| PS 616 | Urban Government and Politics | 3 |
| SS 600 | Minority Group Relations | 3 |
| SS 610 | Urban Sociology | 3 |
| SS 631 | Population Problems and Human Ecology | 3 |
| P 631 | Social Psychology | 3 |
| P 636 | Abnormal Psychology | 3 |
| P 670 | Psychology of Personality | 3 |
| | | 48 |

*Indicates course that may be waived.

## MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING

Industrial engineering is a field undergoing dynamic change. The American Institute of Industrial Engineers, for example, has encouraged training in operations research, systems analysis and engineering, and management science. The University's program in industrial engineering reflects these expanding fields of interest and offers highly flexible graduate programs suited to a student's interests and career requirements. The fields of concentration are:

1. operations research theory, techniques, and application;
2. production and human engineering manufacturing management;
3. computer and information science software and systems; and
4. management science.

Each graduate student is expected to select a particular field of concentration leading to independent study and a formal technical report dealing with his field.

Students pursuing the Master of Science in Industrial Engineering degree are generally oriented toward technical management, manufacturing management, consulting, or management science careers. Industrial engineering is generally viewed as the interaction between management and engineering. A key concern of industrial engineering is man-machine systems and organizations.

### Requirements for the Master of Science in Industrial Engineering Degree

A maximum of 48 semester hours or a minimum of 30 semester hours is required for the Master of Science in Industrial Engineering Degree.

A student must complete the basic core before taking advanced courses in the MSIE program. The basic core consists of IE 601, IE 602, IE 604, IE 607, EC 601, and A 621. Students should note that one or more of the above courses may be waived.

A maximum of 18 semester hours of required courses may be waived on the basis of undergraduate work at accredited institutions.

Courses which may be waived at the discretion of the Department of Industrial Engineering include A 621 (Managerial Accounting), IE 601-602 (Industrial Engineering I and II), EC 601 (Economic Analysis I), IE 604 (Management Systems), and IE 607 (Statistics and Probability).

There is no thesis requirement for the Master of Science in Industrial Engineering degree. All candidates, however, must register for IE 690 (Seminar-Project), a course requiring independent study leading to the preparation of a technical report. Regulations regarding the preparation of the technical report are published by the Department of Industrial Engineering. Students enrolled in this course are assigned a faculty project advisor and must complete the technical report within one calendar year from the date of registration for the course. Each student's technical report is graded by his advisor and must be approved by the Chairman of the Department of Industrial Engineering and the Graduate School. The final report is deposited in the University Library. The report must follow the regulations published by the Graduate School.

Computer programming ability is required in the Master of Science in Industrial Engineering Program. Students lacking a knowledge of programming may elect either BA 600, IE 102, or IE 105 for which no graduate credit is granted.

Twelve semester hours of electives are required in the Master of Science in Industrial Engineering program. Of these 12 semester hours, 9 must be selected from industrial engineering or computer science courses. The other 3 semester hours consitute a free elective which may be satisfied by any graduate course offered by the University.

### Waiver Policy

The courses indicated below may be waived for students in the Master of Science in Industrial Engineering program.

EC 601 (Economic Analysis I) may be waived for a student who has taken a minimum of 6 semester hours of intermediate level economic theory or analysis at the undergraduate level. Economic principles and introductory courses in economics are not considered intermediate level courses.

A 621 (Managerial Accounting) may be waived for a student who has had a minimum of 6 semester hours of undergraduate accounting, including 3 semester hours of either cost accounting or cost control.

IE 601 and IE 602 (Industrial Engineering I and II) may be waived for a student with an undergraduate degree in industrial engineering.

IE 607 (Statistics and Probability) may be waived for a student who has taken a minimum of 6 semester hours of undergraduate engineering statistics, probability, and applied stochastic processes. Students seeking to waive this course may be required to pass a qualifying examination.

IE 604 (Management Systems) may be waived for a student with a minimum of 6 semester hours of undergraduate management theory, systems analysis, or management science.

### Concentration in Computer and Information Science

Starting in January, 1972, the Department of Industrial Engineering will offer a field of concentration in computer and information science. With the approval of Dr. Alexis Sommers, Associate Dean of the Graduate School, graduate students in industrial engineering may elect one or more courses in this field of concentration. The field of concentration comprises a sequence of four courses, two of which are offered by the Department of Mathematics and two of which are offered by the Department of Industrial Engineering. The courses are:

M 610 Computer Science Mathematics
M 620 Numerical Analysis
IE 610 Computer Systems Design
IE 614 Data Information Systems

A graduate student in industrial engineering may take one or more of these courses as electives or in some instances in place of a required course.

Graduate students in industrial engineering who are interested in the field of computer information science should contact Dr. Sommers.

## PROGRAM OF STUDY FOR THE MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING DEGREE

### Required Courses

| *Course Number and Title* | | *Credit* |
|---|---|---|
| *A 621 | Managerial Accounting | 3 |
| *IE 601-602 | Industrial Engineering I and II | 6 |
| *EC 601 | Economic Analysis I | 3 |
| *IE 604 | Management Systems | 3 |
| *IE 607 | Statistics and Probability | 3 |
| IE 611 | Budgeting and Control | 3 |
| IE 621-622 | Operations Research I and II | 6 |
| EC 625 | Industrial Releations | 3 |
| IE 681 | Industrial Dynamics | 3 |
| IE 690 | Seminar - Project | 3 |
| | Electives | 12 |
| | | 48 |

### Elective Courses

| *Course Number and Title* | | *Credit* |
|---|---|---|
| IE 610 | Computer Systems Design | 3 |
| IE 612 | Industrial Systems Economics | 3 |
| IE 614 | Data Information Systems | 3 |
| IE 619 | Enterprise Design and Evaluation | 3 |
| IE 623 | Operations Research III | 3 |
| IE 631 | Production Engineering | 3 |
| IE 641 | Quality Control Economics | 3 |
| IE 643 | Reliability and Maintainability | 3 |
| IE 651-652 | Human Engineering I and II | 6 |
| IE 655 | Value Engineering | 3 |
| IE 663-664 | Tooling Techniques I and II | 6 |
| IE 683 | Systems Analysis | 3 |
| M 610 | Computer Science Mathematics | 3 |
| M 620 | Numerical Analysis | 3 |

* Indicates courses that may be waived.

# COURSE DESCRIPTIONS

## Department of Accounting

**A 621 Managerial Accounting**

Accounting as a general information system for economic activities. The relation of accounting with other social sciences. Accounting data output as a basis for business decisions.

The accounting cycle, including source data production, collection, compilation, report production, and interpretation of financial statements. Price level impact, cash and fund flow, cost control, short and long-term (capital) budgeting, (condensed) computer applications, and link-up with operations research.

No prerequisite.

**A 661 Managerial Accounting Seminar**

Audited financial statements. Trends in presentation. Accounting principles: the AICPA Board, the SBC and U.S. Treasury Department as "co-authors" of principles and mandatory disclosures requirements. Concepts of branch operations, mergers, consolidations, and conglomerates. Divisive reorganizations: split-up, split-off, and spin-off.

Accounting dilemma for international operations. Management accounting concepts versus financial and tax accounting. Impact of high-speed, multi-media data processing on management accounting functions. Management control concepts. Management by exception, use of cost accounting in budgeting, business decisions and budgeting, and capital expenditures.

Prerequisites: A 621 Managerial Accounting or 6 or more credits in accounting.

## Department of Business Administration

**BA 609 Marketing**

An intensive study of modern marketing methods and concepts for the student who has not had undergraduate work in marketing. Includes a review of marketing fundamentals, a study of the decision-making problems encountered by the marketing executive, and the relation of marketing to environmental forces.

No prerequisite.

**BA 615 Finance**

A study of business corporations in their modern setting. A survey of historical development followed by promotional functions, description and evaluation of corporate financial instruments, capitalization, corporate management, sale and regulation of corporate securities, income and working capital, corporate expansion, failure and reorganization.

Prerequisites: EC 601-602 Economic Analysis I & II
EC 603-604 Quantitative Methods I & II

**BA 633 Managerial Economics**

A study of the application of the major tools of economic analysis to the problems encountered by management in the organization of the firm. Topics include the theory and measurement of consumer demand, measurement and control of costs, the effects of public policy upon managerial decisions, and pricing techniques and the allocation of capital within the firm.

Prerequisites: EC 601-602 Economic Analysis I & II
EC 603-604 Quantitative Methods I & II

**BA 635 Thesis Seminar I**

Periodic lectures and discussions on advanced topics in the field of management. Critique of the individual student's progress in the preparation of a thesis.

No prerequisite.

**BA 636 Thesis Seminar II**

A continuation of Thesis Seminar I.

Prerequisite: BA 635 Thesis Seminar I

**BA 637 Seminar in Management Theory**

A survey of the literature of management theory. Based on a wide range of independent reading, the student is provided the opportunity to analyze and assess the contribution by major writers in the field of management theory.

No prerequisite.

**BA 639 Marketing Research**

An overview of marketing research as part of the marketing information system. A study in depth of managerial considerations as they relate to locations within corporate structure, staffing of the research activity, initiation and approval of market research projects, budgetary controls, and measurement of effectiveness.

Prerequisite: BA 609 Marketing.

**BA 641 Mathematical Models and Methods in Marketing**

The treatment of the basic decision problems of marketing management in terms of a conceptual framework for analysis. Consideration of the role played by human judgements and the mathematical tools available to aid in these judgements in a number of marketing areas, notably market analysis, pricing decisions, advertising decisions, promotional decisions, and selection of distribution channels.

Prerequisites: BA 609 Marketing and
BA 639 Marketing Research.

**BA 645 Current Problems in Corporate Finance**

Designed to enable students to apply the principles acquired in the basic course in corporate finance to the solution of advanced problems faced by corporate management. Topics include optimal depreciation policies and investment credits, depletion, capital gains and dividend taxation, and merger valuation problems.

Prerequisite: BA 615 Finance.

**BA 649 Investments**

Designed to acquaint the student with security markets, the various types of investment securities, and the recognized tests of safety, income, and marketability. Study of the techniques for critical analysis and interpretation of corporate reports from the investment viewpoint.

No prerequisite.

**BA 657 Forecasting**

Critical analysis of cyclical and growth theories and models is made in an attempt to establish a valid framework for economic forecasting. Identification, analysis, and appraisal of forces influencing the course of economic activity is stressed. Students are provided an opportunity to utilize a variety of forecasting and projecting techniques.

Prerequisites: EC 601-602 Economic Analysis I & II

**BA 669 Insurance: Principles and Practices**

Comprehensive introduction to the general insurance field. Covers types of insurance and general underlying principles. Considers the management of insurable risk in industrial and commercial firms.

No prerequisite.

**BA 673 Business Law: Contracts and Sales**

Survey of the ordinary legal aspects of contracts and the results of contractual obligations. The law governing the marketing of goods as it relates to personal property. The law of bailments and common carriers.

No prerequisites.

**BA 677 Business Law: Negotiable Instruments, Business Organizations, and Real Estate**

Survey of the law of negotiable instruments as reflected in the Uniform Negotiable Instruments Act and the Uniform Commercial Code, with emphasis on commercial paper commonly used in business transactions. The law concerning the formation and operation of partnerships, corporations, and other business organizations. Real property law respecting conveyances, mortgages, and landlord and tenant.

No prerequisite.

## Department of Economics

**EC 601 Economic Analysis I**

An examination of the roles of consumption, investment, government finance, and money influencing national income and output, employment, the price level, and rate of growth. Policies for economic stability and growth.

No prerequisite.

**EC602 Economic Analysis II**

Topics in resource allocation and price determination. Theories of choice of consumers, firms, resource owners under monopoly, monopsony, competition, and alternative market forms.

Prerequisite: EC601 Economic Analysis I or equivalent.

**EC603 Quantitative Methods I**

Basic mathematics and statistics for business problem solving. Includes set theory, matrix algebra, probability, models, descriptive statistical measures, regression and correlation, time series, index numbers, statistical inference, differential and integral calculus.

Prerequisite: Two semesters of college mathematics.

**EC604 Quantitative Methods II**

More advanced mathematics for business problem solving. Includes mathematical model building, sequences, finite and infinite calculus, optimization models, simulation, mathematical programming and multiple regression.

Prerequisite: EC603 Quantitative Methods I or equivalent.

**EC608 Economics for Public Administrators**

An examination of the roles of consumption, investment, government expenditure, and money influencing national income, output, employment, and price level, and growth rate. Special emphasis upon the roles of fiscal and monetary policy and the economics of contemporary social problems.

No prerequisite.

**EC625 Industrial Relations**

Collective bargaining strategies and policies of management and unions, union structure and tactics, labor legislation, wage theories, and problems of union security, unemployment and government control.

Prerequisite: EC601-602 Economic Analysis I & II

**EC629 Public Policies Toward Business**

A survey of the economic aspects of government and business relations. Emphasizes the concept of public control over certain types of business and certain forms of business activity. Combination movements, pricing procedures, anti-trust laws and agencies enforcing them, regulation of transportation and public utilities, rate-making for transport, and pricing public utility services.

Prerequisite: EC601-602 Economic Analysis I & II

**EC653 Econometrics**

Review of probability, statistics, and matrix algebra. Linear models, including two, three, and multi-variable regression models as well as input models. Nonlinear models, including nonlinear regression models and nonlinear functions fit to time series data. Computer simulation models, and problems of specification, estimation, prediction, and verification.

Prerequisites: EC603-604 Quantitative Methods I & II

**EC687 Collective Bargaining**

Emphasis on the negotiating process. The labor contract as it involves wages, worker security, management authority, and handling of grievances arising during the life of the contract.

Prerequisite: EC625 Industrial Relations

**EC691 Labor Legislation**

Considers the legal status of unions as set forth in state and federal legislation, and court decisions. Reviews recent NLRB rulings. Protective legislation dealing with wages, hours, child labor, and accident and unemployment compensation.

Prerequisite: EC625 Industrial Relations.

## Department of Industrial Engineering

**IE601 Industrial Engineering I**

Introduction to industrial engineering with emphasis on its interfaces with management science, operations research, systems analysis, and production control. Manufacturing areas of concern include routing, scheduling, materials handling, transportation, inventory theory, and industrial automation. Analytical techniques are described, including linear programming, dynamic programming, decision theory, and critical path methods. Traditional roles in work methods and production operations are discussed in conjunction with expanding industrial engineering functions in urban and socioeconomic systems.

Prerequisites: EC603 Quantitative Methods I or IE607 Statistics and Probability.

**IE602 Industrial Engineering II**

Survey of the methodology used in factory planning, plant layout, and materials handling design. Statistical quality control concepts of sampling and control chart techniques.

Prerequisites: IE601 Industrial Engineering I and IE607 Statistics and Probability.

**IE604 Management Systems**

An analysis of management organization theory and principles as applied to the total operating system with stress on normative behavioral systems.

No prerequisite.

**IE607 Statistics and Probability**

A comprehensive introduction to engineering and mathematical, statistical, and probability theory as applied to operational problems. Includes descriptive statistics, inference, elementary probability, and normal, binominal, Poisson, and hypergeometric distributions.

Prerequisite: M203 Calculus III

**IE610 Computer Systems Design**

Techniques for designing, installing, and operating computer systems and their peripheral equipment. Concepts of decision with respect to compiler and hardware selection. Development of operating procedures, from design, systems charting, and documentation.

Prerequisites: IE102 Introduction to the Computer and IE105 Technical Data Processing or BA600 Computer Orientation.

**IE611 Budgeting and Control**

An analytical approach as applied to the principles and policies of operational budgeting and control of expense and capital investments. Includes forecasting techniques, development of totally integrated systems with traditional financial statements and controls from top management to first line supervision.

Prerequisite: A621 Managerial Accounting

**IE612 Industrial Systems Economics**

The systems analysis approach and methods of industrial engineering applied to the examination of industrial production, the interaction between technical and managerial groups, and the determination of production methods according to productivity measures and alternate cost analysis.

Prerequisite: Permission of the instructor.

**IE614 Data Information Systems**

Introduction to automated information systems planning and operations and their impact on management decision-making, control functions, and communication capabilities. An overview of concepts and procedures with applications in urban environments, large organizations, and governmental agencies. Selected case studies are analyzed.

Prerequisites: IE102 Introduction to the Computer and IE105 Technical Data Processing or BA600 Computer Orientation.

**IE619 Enterprise Design and Evaluation**

An analysis of the principles and methods used in estimating the probable economic characteristics of proposed enterprises. The student is required to formulate a proposed enterprise, including the technical, financial, and organizational requirements.

Prerequisite: IE601 Industrial Engineering I

**IE621 Operations Research I**

Introduction to the philosophy and methodology of operations research. Emphasis on the analysis of linear programming theory and application. Includes assignments, transportation, and simplex methods.

Prerequisites: EC604 Quantitative Methods II or IE607 Statistics and Probability.

**IE622 Operations Research II**

Analysis of the mathematical models of finite and infinite queuing theory as they apply to indutrial problems such as inventory policy and machine interference.

Prerequisites: EC604 Quantitative Methods II or IE607 Statistics and Probability.

**IE623 Operations Research III**

Analysis and development of probabilistic techniques as applied to decision theory, game theory, and stochastic processes and their applications.

Prerequisites: EC604 Quantitative Methods II or IE607 Statistics and Probability

**IE631 Production Engineering**

An analysis and practical application of engineering activity that results in the transformation of natural resources into a finished product.

Prerequisites: IE601 and IE602 Industrial Engineering I & II

**IE641 Quality Control Economics**

An economic managerial analysis of statistical quality control sampling and control chart systems with application to accepted and hybrid systems.

Prerequisites: IE602 Industrial Engineering II and IE607 Statistics and Probability or EC604 Quantitative Methods II

**IE643 Reliability and Maintainability**

The basic theory and methodology of reliability and maintainability, including application of discrete and continuous distribution and statistical designs. Reliability, estimation, structure models, and growth models.

Prerequisites: IE 602 Industrial Engineering II and IE607 Statistics and Probability or EC604 Quantitative Methods II

**IE651-652 Human Engineering I & II**

A broad coverage of the physiological, psychological, and sociological aspects of man and the society in which he lives and works. Special topics include human factors, motivation, group dynamics, and ekistics.

No prerequisite.

**IE655 Value Engineering**

Consideration of value analysis from the point of view of design, manufacturability, procurement, installation, and maintainability in order to optimize value in products.

Prerequisite: IE602 Industrial Engineering II

**IE663 Tooling Techniques I**

A survey of advanced tooling techniques and metal forming theories, with emphasis on practical applications and economic analyses.

Prerequisites: IE601 Industrial Engineering I
IE602 Industrial Engineering II
and IE607 Statistics and Probability.

**IE664 Tooling Techniques II**

Topics in contemporary tooling and metal forming research, including non-metallic and composite materials in modern manufactured products. Theories of bonding and cutting are analyzed and placed in a manufacturing perspective.

Prerequisites: IE601 Industrial Engineering I
IE602 Industrial Engineering II
and IE 607 Statistics and Probability.

**IE681 Industrial Dynamics**

A study of the behavior of firms and industries by computer simulation of their organizational structure and decision criteria.

Prerequisites: IE621 Operations Research I
IE622 Operations Research II
or EC603 Quantitative Methods I
EC604 Quantitative Methods II.

**IE683 Systems Analysis**

Techniques and philosophies defining the concept of systems analysis are presented in detail and illustrated with large-scale case studies. Diverse systems are analyzed covering the social, urban, industrial, and military

spheres. Techniques presented include utility theory, decision analysis, nonparametric and survey statistics, critical path methods, computer control and simulation, and technological forecasting.

Prerequisites: IE 601 Industrial Engineering I or EC 603 Quantitative Methods I and BA 600 Computer Orientation or equivalent.

**IE 690 Seminar - Project**

Independent study under the guidance of an advisor into an area of mutual interest, such study terminating in a technical report of academic merit. Research may constitute a survey of a technical area in industrial engineering, operations research, or management science, or may involve the solution of an actual or hypothetical technical problem.

Prerequisite: Fifteen credit hours of coursework or by permission of the instructor.

## Department of Mathematics

**M 610 Computer Science Mathematics**

Review of linear algebra, linear equations, and Euclidean space. Classical optimization techniques. Introduction to stochastic processes, including Markov Theory and birth-death processes. Introduction to sensitivity analysis.

Prerequisites: M 117 Calculus I and M 118 Calculus II

**M 620 Numerical Analysis**

Introduction to optimization theory, including gradient, Newton-Raphson and Fibonacci methods. Construction and solution of differential-difference equations. Introduction to dynamic programming.

Prerequisites: M 610 Computer Science Mathematics or equivalent.

## Department of Psychology

**P 619 Organizational Behavior**

An analysis of various theories of business and managerial behavior emphasizing the business organization and its internal processes. Psychological factors in business and industry, including motivation, incentives, and conflict. A study of research findings relevant to an understanding and prediction of human behavior in organization.

No prerequisite.

**P620 Administrative Behavior**

The problems faced by an administrator in dealing with interpersonal relationships and human processes. Analysis of individual and group behavior in various business settings to determine the administrative action for the promotion of desired work peformance.

Participation in actual problem situation discussions and case studies.

Prerequisite: P619 Organizational Behavior

**P631 Social Psychology**

All in-depth investigation of the interdependence of organizations and behavior. The inter-relationships between role systems and personality; attitude analysis, development, and modifications' group interaction analysis; social conformity; social class and human behavoir.

No prerequisite.

**P636 Abnormal Psychology**

Major personality theories and their implications.

No prerequisite.

**P670 Psychology of Personality**

An examination of the psychological and organic factors involved in personality training.

No prerequisite.

## Department of Public Administration

**PA600 Principles of Public Administration**

The development, organization, functions, and problems of national, state, and local administration.

No prerequisite.

**PA602 Public Policy Formulation and Implementation**

The relationship between public administration and the formulation of public policies is studied. The implementation of public policies by administrators based on the politics of the administrator is examined in terms of interaction between various group representatives, i.e. the legislators, the politician, the pressure group leaders.

Prerequisite: PA600 Principles of Public Administration I.

**PA603 Resource Administration**

Growth of the concept of conserving and developing natural resources and its translation into public policy. Organization of the interrelationships among the principal resources administration agencies; the coordination of resources program, national, state and local.

Prerequisite: PA602 Public Policy Formulation and Implementation.

**PA 604 Seminar in Communities and Social Change**

Interaction between the community as a social organization and education, police, and welfare institutions within it; special attention to conceptual frameworks and current research or action programs that impact particularly on minority groups.

No prerequisite.

**PA 605 The Communication Process**

Major emphasis on the role of communication in a democracy and the effects of communication content. Brief treatment of content analysis techniques, person - to - person communication, and barriers to the flow of communication.

No prerequisite.

**PA 620 Public Personnel Administration and Collective Bargaining in the Public Sector**

Study of the civil service systems of the United States and the state governments, including a systematic review of the methods of recruitment, promotion, discipline, control, and removal.

Explores the effects on work relationships as a result of collective bargaining statutes which have been adopted by legislatures. Emphasis is placed on Connecticut's collective bargaining statutes.

No prerequisite.

**PA 630 Governmental Accounting**

A comprehensive survey of the essential principles of governmental, accounting, budgeting, cost accounting, and financial reporting. The various operating funds, bonded debt, fixed assets, investments, classification of revenue and expenditures, general property taxes, and interfund relationships.

Prerequisite: One semester of accounting.

**PA 632 Public Finance and Budgeting**

State and local expenditure patterns, state and local revenue sources, income taxation at the state and local level, excise taxation, sales taxation, taxation of capital, and the property tax. Emphasis on fiscal and economic aspects of federalism and federal-state fiscal coordination. The role of the budget in the determination of policy, in administrative integration, in control of government operations.

Prerequisite: PA 602 Public Policy Formulation and Implementation.

**PA 633 Financial Administration**

Seminar on selected aspects of public financial administration including revenues, accounting, expenditures, public debt, special funds, and auditing.

Prerequisite: PA 630 Governmental Accounting

**PA634 Problems of Municipal Management**

Study of selected problems of city management, with emphasis on "housekeeping" and line operations.

Prerequisite: Pa 630 Governmental Accounting

**PA635 Statistics for Public Administrators**

Provides a basic theoretical treatment of the nature of statistical analysis and its role in economic research design and procedure.

No prerequisite.

**PA650 Administrative Law**

A searching for principles and criteria against which public interest can be blanced with private right in the changing patterns of government, with particular reference to the American system.

Prerequisite: PA600 Principles of Public Administration I.

**PA651 Municipal Corporation**

Nature of the municipal corporation embracing creation and dissolution legislative power over such corporations, extent of municipal powers, police power, zoning, power to contract, rights and remedies of creditors, power to issue evidence of indebtedness.

Prerequisite: PA650 Administrative Law.

**PA660 Urban Planning: Theory and Practice**

Explores the concept of physical planning within the urban development framework. The function of planning in its relationship to the environment. Comprehensive planning with its many ramifications involving the various sections of our society. Methods for analyzing problems as well as design methods for problem solving.

Prerequisite: PA602 Public Policy Formulation and Implementation.

**PA661 Problems of Metropolitan Areas**

Analysis of the problems of government and administration arising from the population patterns and physical and social structures of contemporary metropolitan communities.

Prerequisite: PA660 Urban Planning: Theory and Practice.

**PA662 Environmental Design**

The basic problems necessary to an assessment of the quality levels of the environment based on geographic areas. Factors responsible for community development.

Prerequisite: PA660 Urban Planning: Theory and Practice.

**PA 690 Seminar Project in Public Administration**

Seminar for advanced graduate students on selected problems in public administration. May be repeated for credit.

No prerequisite.

**PA 691 Research Methods in Public Adminstration**

Designed to familiarize the administrator with the tools and potentialities of social research and to assist him in the presentation, interpretation, and application of research data.

No prerequisite.

**PA 692 Seminar in Public Opinion**

Problems of indentification and analysis of public opinion and its impact upon the political process. Problems of data collection and questionnaire construction; categorization of qualitative data, elements of scaling, logic of multivariate analysis; role of comparative and cross-national surveys of publoc opinion.

Prerequisite: PA 602 Public Policy Formulation and Implementation.

**PA 693 Public Administration Internship**

A supervised work experience in a cooperating public service agency related to government.

No prerequisite.

## Department of Political Science

**PS 604 Political Parties**

A historical and functional analysis of the operation of the American Party system with special reference to interest groups, public opinion, electoral behavior, and proposals for reorganization of the existing party system.

No prerequisite.

**PS 608 The Legislative Process**

The role of the legislature in modern American Government at the State and National level, theories of representation, the relationship of electors and apportionment to the law making process, the veto power, the committee system, seniority rules, and Constitutional limitations, as well as the interest group phenomenon.

No prerequisite.

**PS 616 Urban Government and Politics**

An examination of the historical structures and processes of urban metropolitan government with special emphasis on conflict and cooperative factors.

No prerequisite.

**SS 600 Minority Group Relations**

An interdisciplinary survey of minority groups in the United States with special reference to ethnic, religious, and racial factors that influence interaction.

No prerequisite.

**SS 610 Urban Sociology**

The problem of urban growth and development. Residential patterns together with the physical development of cities and the redevelopment plans. An examination of the people and their relationships to the environment.

Prerequisite: PA 604 Seminar in Communities and Social Change.

**SS 631 Population Problems and Human Ecology**

A sociological approach to social demography with attention on population growth, patterns of distribution of population, and population changes and trends.

No prerequisite.